

We claim:

1 1. An apparatus for extracting cells from organs, comprising:
2 a digestion chamber for containing said organ and a physiologically compatible
3 medium with at least one protease, said digestion chamber having at least one inlet and at least
4 one outlet, and a separator for retaining said organ and permitting said cells and said
5 physiologically compatible medium to exit said outlet;
6 at least one agitation member in said digestion chamber, said agitation member
7 having an interior with at least one void.

2 2. The apparatus of claim 1, wherein said agitation member comprises a non-
corrosive metal.

3 3. The apparatus of claim 1, wherein said agitation members are comprised of a
substantially smooth, continuous exterior surface.

4 4. The apparatus of claim 1, wherein said agitation members are substantially
spherical.

5 5. The apparatus of claim 4, wherein said agitation member has an interior with one
centrally located substantially spherical void.

1 6. The apparatus of claim 1, wherein said agitation members have a density of about
2 3.0 - 4.0 g/cm³.

1 7. The apparatus of claim 1, wherein said agitation members have a density of about
2 3.5 g/cm³.

1 8. An agitation member for a digestion chamber of an apparatus for extracting cells
2 from organs, said agitation members having an interior with at least one void.

9. The agitation members of claim 8, wherein said agitation member comprises
a non-corrosive metal.

10. The agitation member of claim 8, wherein said agitation member has a
substantially smooth, continuous exterior surface.

11. The agitation member of claim 8, wherein said agitation member is
substantially spherical.

12. The agitation member of claim 11, wherein said agitation member has an interior
with one centrally located substantially spherical void.

1 13. The agitation member of claim 8, wherein said agitation member has a density
2 of about 3.0 - 4.0 g/cm³.

1 14. The agitation member of claim 8, wherein said agitation member has a density of
2 about 3.5 g/cm³.

1 15. A method for extracting cells from an organ, comprising the steps of:
2 providing a physiologically compatible medium with at least one protease;
3 providing a digestion chamber, said chamber having at least one inlet and at least
4 one outlet, and a separator for retaining said organ and permitting said cells and said
5 physiologically compatible medium to exit said outlet;
6 providing at least one agitation member in said digestion chamber, said agitation
7 members having an interior with at least one void;
8 flowing said physiologically compatible medium through said digestion chamber;
9 moving said agitation member within said digestion chamber, whereby said
10 agitation members will agitate said organ to facilitate release of said cells; and
11 collecting said cells.

1 16. The method of claim 15, wherein the step of moving said agitation member
2 further comprises a step of moving said digestion chamber so as to move said agitation member
3 within said digestion chamber.

1 17. The method of claim 15, wherein said agitation member comprises of non-
2 corrosive metal.

1 18. The method of claim 15, wherein said agitation member comprises a
2 substantially smooth, continuous exterior surface.

1 19. The method of claim 15, wherein said agitation member is substantially
2 spherical.

1 20. The method of claim 19, wherein said agitation member has an interior with one
2 centrally located substantially spherical void.

1 21. The method of claim 15, wherein said agitation members has a density of about
2 3.0 - 4.0 g/cm³.

1 22. The method of claim 15, wherein said agitation member has a density of about
2 3.5 g/cm³.

1 23. The method of claim 15, wherein said protease is collagenase.

1 24. The method of claim 15, wherein said organ is a pancreas and said cells are
2 Islets of Langerhans.

1 25. The method of claim 15, wherein said physiologically compatible medium is
2 heated prior to entering said digestion chamber.

1 26. The method of claim 15, wherein said physiologically compatible medium is
2 heated to a temperature selected to maximize the effectiveness of the protease.

1 27. The method of claim 15, wherein said heating heats said physiologically
2 compatible medium to a temperature between 24° C - 40° C.

1 28. The method of claim 15, wherein said heating heats said physiologically
2 compatible medium to a temperature of about 37° C.

1 29. The method of claim 15, wherein said physiologically compatible medium is
2 cooled following exit from said outlet of said digestion chamber.

1 30. The method of claim 15, wherein said cooling cools said physiologically
2 compatible medium to a temperature between 4° C - 20° C.

1 31. The method of claim 15, wherein prior to said step of collecting said cells,
2 further comprising a step of detecting said cells in said physiologically compatible medium.

1 32. The method of claim 15, further comprising a step of removing said
2 physiologically compatible medium containing said cells, and adding additional physiological
3 compatible medium without heating prior to entering said digestion chamber.

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